

PROB: Mod. Differences across countries
 between...
 Add...
 Add...
 Add...

1. Total...
 $y = 2x - 1$ at points $(1, 2)$

distributed
 $y = 5x$
 ...

$m = 4$
 $m = 5$
 $m = 4$

Intercept: $y = y_0 + \alpha(x - x_0)$
 $y = 2 = 4(1 - 1)$

Intercept: $y = 2 = 4(1 - 1)$
 $y = 4(1 - 1) = 0$, which gives the equation of the horizontal

Normal: $\text{slope} = \frac{1}{4}$

$y = y_0 + \alpha(x - x_0)$
 $4(1 - 2) = \frac{1}{4}(1 - 1)$

$4y = 8 = -m + 1$
 $4y + m - 9 = 0$, which gives the equation of the normal

NAME - NIS - NIM - NAMA ALAM (KELAS)
MATA KULIAH - (MATERI) 151
BENTUK - (RUMUS)
MATERI
2

$$y = 3x^2 - 2x \quad (1, 2)$$

$$\frac{dy}{dx} = 6x - 2$$

$$\text{misal } x = 1$$

$$\frac{dy}{dx} = 6(1) - 2 = 12 - 2 = 10$$

$$\text{Turunkan } y = y_1 = m(x - x_1)$$

$$y - 8 = 10(x - 2)$$

$$y - 8 = 10x - 20$$

$$y = 10x + 12 = 0$$

$$\text{Nilai awal : } m_1 = \frac{-1}{10} = \frac{1}{10}$$

$$y_1 = y_2 = m_2(x_2 - x_1)$$

$$10(y - 8) = -1(x - 2) \times 10$$

10

$$10y - 80 = -x + 2$$

$$10y + x - 82 = 0$$

PROBLEM 1.10. Find the Laplace transform of the function

$$f(t) = \begin{cases} 1 - 2t, & 0 \leq t < 1 \\ 2t - 1, & 1 \leq t < 2 \\ 0, & t \geq 2 \end{cases}$$

$$f(t) = (1-2t)u(t) + (2t-1)u(t-1)$$

$$F(s) = \int_0^{\infty} f(t)e^{-st} dt = \int_0^1 (1-2t)e^{-st} dt + \int_1^2 (2t-1)e^{-st} dt$$

$$= \left[-\frac{1}{s}e^{-st} + \frac{2}{s^2}te^{-st} \right]_0^1 + \left[\frac{2}{s}te^{-st} - \frac{1}{s}e^{-st} \right]_1^2$$

$$= \left[-\frac{1}{s} + \frac{2}{s^2} \right] + \left[\frac{2}{s}e^{-2s} - \frac{1}{s}e^{-2s} - \left(\frac{2}{s}e^{-s} - \frac{1}{s}e^{-s} \right) \right]$$

$$= \frac{1}{s^2}(2-s) + \frac{1}{s}(e^{-s} - 2e^{-2s})$$

$$= \frac{2-s}{s^2} + \frac{e^{-s} - 2e^{-2s}}{s}$$

Problem 1.11. Find the Laplace transform of the function

$$f(t) = \begin{cases} 1-t, & 0 \leq t < 1 \\ 0, & t \geq 1 \end{cases}$$

$$f(t) = (1-t)u(t)$$

$$F(s) = \int_0^{\infty} (1-t)e^{-st} dt = \int_0^1 (1-t)e^{-st} dt$$

$$= \left[-\frac{1}{s}e^{-st} + \frac{1}{s^2}te^{-st} \right]_0^1$$

$$= \left[-\frac{1}{s} + \frac{1}{s^2} \right] + \left[\frac{1}{s}e^{-s} - \frac{1}{s^2}e^{-s} \right]$$

$$= \frac{1-s}{s^2} + \frac{e^{-s}(s-1)}{s^2}$$

$$= \frac{1-s}{s^2} + \frac{e^{-s}(s-1)}{s^2}$$

$$= \frac{1-s}{s^2} + \frac{e^{-s}(s-1)}{s^2}$$

$$= \frac{1-s}{s^2} + \frac{e^{-s}(s-1)}{s^2}$$

Problem 1.12. Find the Laplace transform of the function

$$f(t) = \begin{cases} 1-t, & 0 \leq t < 1 \\ 0, & t \geq 1 \end{cases}$$

$$f(t) = (1-t)u(t)$$

$$F(s) = \int_0^{\infty} (1-t)e^{-st} dt = \int_0^1 (1-t)e^{-st} dt$$

$$= \left[-\frac{1}{s}e^{-st} + \frac{1}{s^2}te^{-st} \right]_0^1$$

$$= \left[-\frac{1}{s} + \frac{1}{s^2} \right] + \left[\frac{1}{s}e^{-s} - \frac{1}{s^2}e^{-s} \right]$$

$$= \frac{1-s}{s^2} + \frac{e^{-s}(s-1)}{s^2}$$

$$= \frac{1-s}{s^2} + \frac{e^{-s}(s-1)}{s^2}$$

$$= \frac{1-s}{s^2} + \frac{e^{-s}(s-1)}{s^2}$$

NAME: NIDA-ULHAFSAH NAWAL KUNDHAMA
MATHS NO. 191000011254
DEPT. MIPA

ASSIGNMENT 3.

4 $y = 1 + x - x^2$ $(-2, -5)$

$C_1 = 1 - 2x$
Or

$m = \frac{dy}{dx}$
Or $m = -2x$

$m = 1 - 2(-2) = 1 + 4 = 5$

Tangent: $(y - y_1) = m(x - x_1)$

$(y - (-5)) = 5(x - (-2))$

$y + 5 = 5x + 10$

$y - 5x + 5 = 0$: which gives the equation of the tangent

Normal: $m_2 = -\frac{1}{m}$

Or

$m_2 = -\frac{1}{5}$

5

$(y - y_1) = m_2(x - x_1)$

$5 \times (y - (-5)) = -\frac{1}{5}(x - (-2)) \times 5$

$5y + 25 = -x - 2$

$5y + 25 = -x - 2$

$5y + x + 27 = 0$: which gives the equation of the normal

NOME: NDU VIGNARON ANDRE (WEDNESDAY)
 MATHS NO. 41/1000/157
 DEPT: MATHS
 FACULTY: MATHS

$$5 \quad y = \frac{x}{n} \quad \left(3, \frac{1}{3}\right)$$

$$y = x'$$

$$4 \quad y = -1x^2 = \frac{1}{n^2}$$

$$3 \quad \frac{y_1}{n} = \frac{1}{n^2} \quad \left(3, \frac{1}{3}\right)$$

$$\text{Therefore } y_2 = y_1 \cdot x_2(n \cdot x_2)$$

$$y_2 \left(y_1 = \frac{1}{3} \right) = -1 \cdot (n-3) \cdot 9$$

$$9y_2 = 3 = -n + 3$$

$9y_2 + n - 6 = 0$: substitute y_2 into the equation of the tangent

$$\text{Normal } \frac{y_2 - 1}{-1} = \frac{-1 - \frac{1}{3}}{9} = \frac{-4}{9} = \frac{4}{9}$$

$$m_2 = 9$$

$$y - y_1 = m_2(x - x_1)$$

$$\left(\frac{1}{3} - \frac{1}{3} \right) = 9(x - 3)$$

$$y - \frac{1}{3} = 9x - 27$$

$$y - 9x + 80 = 0$$

$3y - 27x + 80 = 0$: which gives the equation of the normal